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Patent Application No. 10/726,387

Attorney File No. 63833-5028

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A composite construction having a material microstructure comprising a plurality of randomly arranged granules, each granule comprising a first material phase and a second material phase in an ordered arrangement that each occupy a different and distinct region of the granule, wherein the first and second material phase comprises phases each comprise a material or precursor for forming a material selected from the group consisting of polycrystalline diamond, polycrystalline cubic boron nitride, and mixtures thereof, wherein one of the first or second material phases ~~comprises a material that~~ in sintered form is relatively softer than the other of the first or second material phases, and wherein at least a portion of the first or second material phase of one or more granules is in contact with a portion of a same material phase of an adjacent granule.

2. (Original) The composite construction as recited in claim 1 wherein each granule comprises a centrally positioned core that is formed from one of the material phases, and a shell that surrounds at least a portion of the core and that is formed from the other of the material phases.

3. (Original) The composite construction as recited in claim 2 wherein each granule has a cylindrical configuration with the shell disposed concentrically around the core.

4. (Original) The composite construction as recited in claim 1 wherein the granule first and second material phases are formed from the same general type of material.

5. (Previously Presented) The composite construction as recited in claim 1 further comprising a binder phase interposed between the plurality of randomly arranged granules.

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6. (Canceled)

7. (Previously Presented) A composite construction formed from a plurality of combined granules, the construction having a material microstructure comprising:

a plurality of first material regions each comprising a material or precursor for forming a material selected from the group consisting of polycrystalline diamond, polycrystalline cubic boron nitride, and mixtures thereof, wherein the first material regions are each formed from a first material phase of the granules; and

a second material region surrounding the first material regions and comprising a material selected from the same group of materials as that used to form the first material region, wherein the second material region is formed from a second material phase of each of the granules that is distinct from the granule first material phase and wherein when the granules are combined the second material phases of the granules contact one another to form the second material region;

wherein the plurality of granules are arranged with one another in random fashion to provide a randomly-oriented microstructure, and wherein the randomly-oriented microstructure is disposed along a working surface of the composite construction.

8. (Previously Presented) The composite construction as recited in claim 7 wherein the second material region has a degree of hardness that is different from that of the first material region.

9. (Previously Presented) The composite construction as recited in claim 7 wherein the granule first material phase is a centrally positioned core, and the granule second material phase is a shell that surrounds at least a portion of the core.

10. (Previously Presented) The composite construction as recited in claim 7 wherein the core and shell are each cylindrical in configuration.

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11. (Previously Presented) The composite construction as recited in claim 7 further comprising a matrix binder region, and wherein the composite first and second material regions are dispersed therein.

12. (Original) A subterranean drill bit comprising a wear surface formed from the composite construction as recited in claim 7.

13. (Previously Presented) A composite construction formed by combining a plurality of granules, the construction including:

a plurality of first regions that are formed from a first material phase of the granules comprising polycrystalline diamond; and

a continuous second region formed from a second phase of the granules, wherein the granule second phase is formed from polycrystalline diamond first region;

wherein the plurality of granules are combined together so that the first and second phases of adjacent granules are randomly oriented with respect to one another.

14. (Currently Amended) The composite construction as recited in claim 14 13 wherein each granule comprises a cylindrical structure having a centrally-positioned core and a surrounding shell, and wherein the core is the first phase and the shell is the second phase.

15. (Currently Amended) The composite construction as recited in claim 14 13 further comprising a matrix binder phase interposed between the granules.

16. (Currently Amended) A rotary cone subterranean drill bit comprising:
a bit body including at least one journal pin extending from a leg portion of the bit;
a cutter cone rotatably mounted on the journal pin; and
an insert disposed along a surface of the cutter cone, the insert comprising a composite construction positioned along a working surface of the insert, the composite construction formed from a sintered combination of randomly arranged granules, each granule comprising a first and second material phase in an ordered arrangement that each occupy a different distinct region of the granule, wherein the first and second material ~~phase comprises phase~~ each comprise a

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material or precursor for forming a material selected from the group consisting of polycrystalline diamond, polycrystalline cubic boron nitride, and mixtures thereof, wherein one of the first or second material phases comprises a material that in sintered form is relatively softer than the other of the first or second material phases, and wherein at least a portion of the first or second material phase of one or more granules is in contact with a portion of a same material phase of an adjacent granule.

17. (Currently Amended) The drill bit as recited in claim ~~17~~ 16 wherein the granule comprises a centrally positioned core that is formed from the first material phase, and a shell in contact with the core that is formed from the second material phase.

18. (Canceled)

19. (Currently Amended) A method for producing a composite construction comprising:

forming a plurality of granules each having first and second material phases that occupy distinct portions of each respective granule, wherein the granule first and second material phase ~~comprises phases each comprise~~ a material or precursor for forming a material is selected from the group consisting of ~~cermet materials~~, polycrystalline diamond, polycrystalline cubic boron nitride, and mixtures thereof, and wherein the granule second material phase is formed from a material that is relatively softer than the first material phase;

combining and arranging the plurality of granules together in a random fashion to form a green-state mixture; and

consolidating and sintering the green-state mixture at high-temperature, high-pressure conditions to produce a composite construction having a material microstructure comprising the randomly arranged plurality of granules;

wherein the composite construction comprises a plurality of first regions formed from the granule first material phases disbursed in a ~~construction~~ continuous second region formed from the granule second phases.

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20. (Currently Amended) The method as recited in claim ~~20~~ 19 wherein during the step of combining, further comprising dispersing the plurality of granules into a continuous binder phase material.

21. (Previously Presented) The construction as recited in claim 1 wherein a first phase of at least one of the granules contacts a second phase of an adjacent granule.

22. (Previously Presented) The construction as recited in claim 1 wherein the granule first phase and second phases are both formed from a polycrystalline diamond precursor material, and wherein the diamond content in the granule first phase is different from that in the second phase.

23. (Previously Presented) The composite construction as recited in claim 1 wherein the material used to form the granule first phase has a grain size that is different from that of the material used to form the granule second phase.

24. (Previously Presented) The construction as recited in claim 7 wherein a first phase of at least one of the granules contacts a second phase of an adjacent granule.

25. (Previously Presented) The construction as recited in claim 7 wherein the granule first phase and second phases are both formed from a polycrystalline diamond precursor material, and wherein the diamond content in the granule first phase is different from that in the second phase.

26. (Previously Presented) The composite construction as recited in claim 1 wherein the material used to form the granule first phase has a grain size that is different from that of the material used to form the granule second phase.

27. (Currently Amended) The composite construction as recited in claim ~~17~~ 16 wherein at least a portion of the first or second material phase of one or more granules is in contact with a portion of a same material phase of an adjacent granule.

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28. (Currently Amended) The construction as recited in claim ~~17~~ 16 wherein a first phase of at least one of the granules contacts a second phase of an adjacent granule.

29. (Currently Amended) The construction as recited in claim ~~17~~ 16 wherein the granule first phase and second phases are both formed from a polycrystalline diamond precursor material, and wherein the diamond content in the granule first phase is different from that in the second phase.

30. (Currently Amended) The composite construction as recited in claim 1 wherein the material used to form the granule first phase has a grain size that is different from that of the material used to form the granule second phase, wherein the ~~construction~~ first and second regions each comprise polycrystalline diamond, and ~~where~~ wherein the polycrystalline diamond in the first region has a different proportion of diamond than that in the second region.

31. (Currently Amended) The composite construction as recited in claim ~~20~~ 19 wherein the material used to form the granule first phase has a grain size that is different from that of the material used to form the granule second phase.

32. (Previously Presented) A composite construction formed by sintering a combination of granules, the composite construction comprising:

a plurality of first material regions comprising a material selected from the group consisting of polycrystalline diamond, polycrystalline cubic boron nitride, and mixtures thereof, the plurality of first regions being defined by a core of the granules;

a second material region comprising a material selected from the group consisting of polycrystalline diamond, polycrystalline cubic boron nitride, and mixtures thereof, the plurality of first material regions being dispersed within the second material region, the second material region being defined by a shell that surrounds the core of the granules;

wherein the first and second material regions comprise the same material and have different proportions of the same material constituent, and wherein the granules are combined in a random arrangement.

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